REMARKS

In sections 1 and 2 of the Office Action, the Examiner objected to and/or rejected claims 1, 6, and 15 under 35 U.S.C. §112, second paragraph, as being indefinite. These claims have accordingly been amended to overcome these objections and rejections.

In section 5 of the Office Action, the Examiner rejected claims 6 and 10 under 35 U.S.C. §102(e) as being anticipated by Seo.

Seo describes a VSB transmission system having a pre-equalizer 100, a transmitter 200, and a receiver 300. The pre-equalizer 100 compensates for the group delay characteristic of an externally applied input transmit signal. The transmitter 200 modulates the output signal of the pre-equalizer 100 and outputs the modulated signal as an output transmit signal. The receiver 300 demodulates the output transmit signal and supplies this demodulated signal back to the pre-equalizer 100.

The input transmit signal is stored in a first memory 110 of the pre-equalizer 100. Accordingly, the input transmit signal is provided directly to the pre-equalizer 100, and the input transmit signal stored in the first memory 110 is also provided to the pre-

equalizer 100 as described below. The first memory 110 also stores a reference signal. A second memory 130 of the pre-equalizer 100 stores the demodulated signal provided by receiver 300.

As shown in Figure 3, the pre-equalizer 100 determines an equalizer tap coefficient based on (i) the reference signal stored in the first memory 110, and (ii) an error between the input transmit signal stored in the first memory 110 and the demodulated signal from the receiver 300 stored in the second memory 130. Specifically, the error between the input transmit signal stored in the first memory 110 and the demodulated signal from the receiver 300 stored in the second memory 130 is formed by an adder 126, and a product of this error and the reference signal stored in the first memory 110 is formed by a multiplier 125. The pre-equalizer 100 computes the equalizer tap coefficient from this product and uses the equalizer tap coefficient to compensate for the drop in signal-to-noise ratio (SNR) caused by the channel filter 230 of the transmitter 200.

Either the input or the output of the channel filter 230 of the transmitter 100 is provided as the input to the receiver 300.

As shown in Figures 4a and 4b, the externally applied input transmit signal is received at S100. The input transmit signal is directly fed into the pre-equalizer 100 and is also stored at S110 in the first memory 110. The input transmit signal fed directly into the pre-equalizer 100 is equalized at S120 based on a tap coefficient C(n) at a current time n in order to compensate for signal transmission distortion. The equalized signal is fed into the transmitter 200 and is processed and transmitted at S130-S160.

Either the input or the output of the channel filter 230 of the transmitter 200, as desired, is fed back to the receiver 300 where, at S170-S190, the signal that is fed back is demodulated and stored in the second memory 130 of the pre-equalizer 100. At S200-S230, the error between the input transmit signal and the demodulated signal from the receiver 300 is determined, and this error and the stored reference signal are multiplied together to form a product that is used to calculate the equalizer tap coefficient. This equalizer tap coefficient is used at S240 to adjust the pre-equalizer 100.

As can be seen from the above description, Seo does not anticipate independent claim 6 because Seo does

not disclose, as a minimum, (i) calibration of a receiver, and (ii) a DTV translator incorporating the receiver.

First, Seo does not disclose calibration of the receiver 300. Indeed, there is no disclosure in Seo that the receiver 300 is adjusted at all.

Second, because Seo does not disclose receiving on one frequency and transmitting on another, Seo cannot disclose a DTV translator.

The Examiner asserts that Seo discloses calibration of the receiver 300 in paragraph 0050. However, this paragraph merely states that, upon receiving an externally applied transmit signal, the pre-equalizer 100 performs equalization to compensate for signal transmission distortion. As can be seen, there is no mention here of calibrating the receiver 300.

The Examiner asserts that Figure 2 of Seo discloses a DTV translator. However, Seo does not disclose receiving on one frequency and transmitting on another. Therefore, Seo cannot disclose a DTV translator.

For at least both of these reasons, Seo does not disclose the invention of independent claim 6.

Accordingly, independent claim 6 is not anticipated by Seo.

Because independent claim 6 is not anticipated by Seo, dependent claim 10 is likewise not anticipated by Seo.

In section 7 of the Office Action, the Examiner rejected claims 1 and 5 under 35 U.S.C. §103(a) as being unpatentable over Seo in view of Twitchell.

With respect to independent claim 1, Seo fails to disclose, as a minimum, pre-correction of a DTV translator, and tuning a receiver from a frequency at an input of the DTV translator to a different frequency at the output of the high power amplifier and emission mask filter.

As discussed above, Seo does not disclose pre-correction of a DTV translator. Also, to underscore that Seo does not disclose a DTV translator, Seo does not disclose tuning a receiver from one frequency to another. Indeed, whether one or more tuners are used to perform this tuning, Seo does not disclose tuning a receiver from one frequency to another.

Twitchell describes an apparatus 10 having a plurality of components located sequentially along a data stream 12. The data stream 12 is an information data

stream that is transmitted at a relatively high rate. The apparatus 10 is part of a DTV system 14. The DTV system 14 includes an 8VSB exciter 16 and a transmitter 18.

The transmitter 18 includes a power amplifier 20, a pre-amplification filter 22 located upstream of the power amplifier 20, and a post-amplification filter 24 located downstream of the power amplifier 20.

The 8VSB exciter 16 includes an adaptive non-linear pre-corrector 28 that imposes a pre-distortion to compensate for the non-linear distortion caused by the power amplifier 20, an adaptive linear equalizer 30 that is located downstream of the adaptive non-linear pre-corrector 28 and that imposes a pre-distortion to compensate for the linear distortion caused by the input filter 22, and adaptive linear equalizer 32 that is located upstream of the adaptive non-linear pre-corrector 28 and that imposes a pre-distortion to compensate for the linear distortion caused by the high power filter 24.

The output of the adaptive linear equalizer 30 is provided to a digital-to-analog converter (DAC) 40. The analog signal from the DAC 40 is up converted by an up converter 42, which is driven by a local oscillator 44, to provide the information signal as a modulated

radio frequency signal. The modulated information signal then proceeds through the pre-amplification filter 22, the power amplifier 20, and the post-amplification filter 24.

An adaptive determinations function 46 controls the adaptive linear equalizer 30, the adaptive non-linear pre-corrector 28, and the adaptive linear equalizer 32 to provide the pre-correction. The adaptive determinations function 46 receives a first sample signal 50 from between the input filter 22 and the power amplifier 20, a second sample signal 52 from between the power amplifier 20 and the high power filter 24, and a third sample signal 54 downstream of the high power filter 24.

Twitchell does not disclose how the adaptive determinations function 46 operates to control the adaptive non-linear pre-corrector 28, the adaptive linear equalizer 30, and the adaptive linear equalizer 32 except to say that it controls the adaptive linear equalizer 32 so as to pre-distort the data stream in order to compensate for the non-linear distortion caused by the post-amplification filter 24, that it controls the adaptive non-linear pre-corrector 28 so as to pre-distort the output of the adaptive linear equalizer 32 in order to compensate for the linear distortion caused by the

power amplifier 20, and that it controls the adaptive linear equalizer 30 so as to pre-distort the output of the adaptive non-linear pre-corrector 28 in order to compensate for the linear distortion caused by the pre-amplification filter 22.

As this description of Twitchell indicates, Twitchell does not disclose pre-correction of a DTV translator. Also, to underscore that Twitchell does not disclose a DTV translator, Twitchell does not disclose tuning a receiver from one frequency to another. Indeed, whether one or more tuners are used to perform this tuning, Twitchell does not disclose tuning a receiver from one frequency to another.

Accordingly, because neither Seo nor Twitchell discloses pre-correction of a DTV translator and tuning a receiver from one frequency to another, one of ordinary skill in the art would not have combined Seo and Twitchell so as to meet the limitations of independent claim 1.

For this reason, independent claim 1 is not unpatentable over Seo in view of Twitchell.

Because independent claim 1 is not unpatentable over Seo in view of Twitchell, dependent claim 5 likewise is not unpatentable over Seo in view of Twitchell.

With respect to newly added independent claim 25, neither Seo nor Twitchell discloses pre-correcting a DTV translator, implementing a first coupling that couples an output of the transmitter to the receiver so as to exclude the output of the distortion causing device from the first coupling, calibrating the receiver in response to the tuned transmitter output signal during this first coupling, transferring the calibration to the transmitter, implementing a second coupling that couples the output of the distortion causing device to the receiver, and pre-correcting the DTV translator in response to the output of the distortion causing device during this second coupling.

Accordingly, one of ordinary skill in the art would not have combined Seo and Twitchell so as to meet the limitations of independent claim 25.

For this reason, independent claim 25 is not unpatentable over Seo in view of Twitchell.

Because independent claim 25 is not unpatentable over Seo in view of Twitchell, dependent claims 26-28 likewise are not unpatentable over Seo in view of Twitchell.

CONCLUSION

In view of the above, it is clear that the claims of the present application are patentable over the art applied by the Examiner. Accordingly, allowance of these claims and issuance of the above captioned patent application are respectfully requested.

The Commissioner is hereby authorized to charge $400 (4 additional dependent and 1 independent claims), and any additional fees which may be required, or to credit any overpayment to Account No. 26 0175.

Respectfully submitted,

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